REMARKS

The Final Office Action mailed March 18, 2004 has been reviewed and carefully considered. Claims 1-49 are pending in the application. Claims 1-49 were rejected. It is believed that the remarks provided herein below place pending claims 1-49 in condition for allowance. Reconsideration of the claims in view of the remarks provided herein below and withdrawal of the present rejections are respectfully requested.

In paragraph 1 on page 2 of the Office Action, claims 1-49 were rejected under § 103(a) over Babkin (U.S. Patent No. 5,642,438) in view of Mattela et al. (U.S. Patent No. 5,781,239).

In paragraph 2 on page 3 of the Office Action, claims 1-49 were rejected under § 103(a) over Babkin in view of Dierke (U.S. Patent No. 5,854,757).

Applicants respectfully traverse the § 103(a) rejections.

Applicants' independent claims require at least "arranging discrete cosine transform equations into collections, wherein at least one collection includes at least two discrete transform equations, and wherein the at least two discrete transform equations includes at least two discrete cosine transform constants; scaling the discrete cosine transform equations in a collection by dividing each of the discrete cosine transform constants in the collection by one discrete cosine transform constant from the collection; and representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 are calculated to approximate the scaled discrete cosine transform constants."

Babkin fails to disclose, teach or suggest each and every element recited in the independent claims. More particularly, Babkin fails to disclose, teach or suggest at least "scaling the discrete cosine transform equations in a collection by dividing each of the discrete cosine transform constants in the collection by one discrete cosine transform constant from the collection."

The Office Action states that Babkin suggests scaling transform equations using a scaling term to maintain a substantially uniform ratio between the transform constants within the

collection, i.e., scaling term α for the first collection, δ for the second collection and ν for the third collection.

However, as explained beginning at col. 2, line 34 and continuing to col. 3, line 28, a one-dimensional forward DCT may be written as:

$$F(k) = C(k)/2\sum_{i=0}^{7} f(i)\cos((2i+1)kp)$$

Babkin discloses that shorthand notations may be used for certain trigonomic functions, such as = cos 4p = cos(π/4) = 0.7071067. These shorthand notations are used to form equation set (4).

However, the scaling term α for the first collection, δ for the second collection and ν for the third collection are not scaling terms at all. Rather, α, δ and ν are merely shorthand representations. Moreover, the shorthand notations, α, δ and ν, are not discrete cosine transform constants that are selected from the collection itself.

The Office Action further asserts that scaled transform equations are shown at col. 20, lines 1-10. However, the so-called scaled transform equation shown at col. 20, lines 1-10 are, in reality, only a one-dimensional transform for producing non-normalized components. At col. 10, lines 8-20, Babkin indicates that the transform equation defined by Eqs. set (4) and modified by Eqs. set (4') provide non-normalized coefficients. Moreover, claim 1 clearly states that $\widetilde{F}(.)$ are transformed non-normalized values.

Therefore, the one-dimensional transform for producing non-normalized components does not equate to a scaled discrete cosine transform equations having scaled coefficients that are formed by dividing each of the discrete cosine transform constants in the collection by one discrete cosine transform constant from the collection.

Thus, because Babkin only uses shorthand notations and because α, δ and ν are not scaling terms selected from the collection of transform constants of the collection of equations itself, Applicants respectfully submit that the independent claims are patentable over Babkin. Further, the independent claims are patentable over Babkin because the one-dimensional transform for producing non-normalized components of Babkin do not suggest scaled coefficients that are formed by dividing each of the discrete cosine transform constants in the

collection by one discrete cosine transform constant from the collection. Babkin simply does not disclose, teach or suggest "scaling the discrete cosine transform equations in a collection by dividing each of the discrete cosine transform constants in the collection by one discrete cosine transform constant from the collection."

Mattela and Dierke fail to remedy the deficiencies of Babkin. Mattela and Dierke were cited merely for teaching representation of constants as powers of two. As with Babkin, Mattela and Dierke also fail to suggest scaling the discrete cosine transform equations in a collection by dividing each of discrete cosine transform constants in the collection by one discrete cosine transform constant from the collection.

However, Applicants also submit that Mattela and Dierke fail to suggest representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 are calculated to approximate the scaled discrete cosine transform constants. Mattela and Dierke show a collection of equations, but fail to suggest that equations are arranged into collections.

Applicants maintain that Dierke merely discloses that each row is scaled with its own scaling factor. Thus, Dierke cannot suggest at least two discrete transform equations that include at least two discrete cosine transform constants. Therefore, Dierke cannot suggest scaling the discrete cosine transform equations in a collection by dividing each of the discrete cosine transform constants in the collection by one discrete cosine transform constant from the collection.

Applicants further submit that Mattela merely shows that P matrix constants that are represented as at most six ones in a respective bit representation. The P matrix constants are truncated until at most six ones in a respective bit representation. Thus, Mattela does not suggest sums of powers-of-2 are calculated to approximate the scaled discrete cosine transform constants. Further, the P matrix constants are not formed by scaling the discrete cosine transform equations in a collection by one discrete cosine transform constant from the collection

Thus, Applicants respectfully submit that Babkin, Mattela and Dierke, alone or in combination, fail to suggest all of the elements recited in the independent claims. Accordingly, claims 1, 12, 25, 36 and 47 are patentable over Babkin, Mattela and Dierke.

Moreover, with respect to the § 103(a) rejections of claim 1-49, the alleged motivations for making the asserted combinations are improper for being conclusory and lacking supporting evidence. According to MPEP § 2143.01, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." The alleged motivation for making the Babkin-Mattela combination is "it would have been obvious to a person of ordinary skill in the art to represent the scaled transform constants of Babkin by sums of powers of 2 for performing multiplications by simple shift/add operations as taught by Mattela et al. in order to reduce circuitry and processing time." The motivation is improper because no evidence is provided to indicate that circuitry and processing time needs to be reduced in Babkin. Furthermore, the alleged motivation for making the Babkin-Dierke combination is "it would have been obvious to a person of ordinary skill in the art to represent the scaled transform constants of Babkin by sums of powers of 2 for performing multiplication/division by simple shift/add operations as taught by Dierke et al. in order to reduce circuitry and processing time." Again, the motivation is improper because no evidence is provided to indicate that circuitry and processing time needs to be reduced in Babkin. Therefore, the alleged motivations are improper.

Dependent claims 2-11, 13-24, 26-35, 37-46 and 48-49 are also patentable over the references, because they incorporate all of the limitations of the corresponding independent claims1, 12, 25, 36 and 47. Further, dependent claims 2-11, 13-24, 26-35, 37-46 and 48-49 recite additional novel elements and limitations. Applicants reserve the right to argue independently the patentability of these additional novel aspects. Therefore, Applicants respectfully submit that dependent claims 2-11, 13-24, 26-35, 37-46 and 48-49 are patentable over the cited references.

On the basis of the above amendments and remarks, it is respectfully submitted that the claims are in immediate condition for allowance. Accordingly, reconsideration of this

application and its allowance are requested. Please charge/credit Deposit Account No. 50-0996 (IBMN.002US01) for any deficiencies/overpayments.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Attorney for Applicants, David W. Lynch, at 651-686-6633 Ext. 116.

Respectfully submitted,

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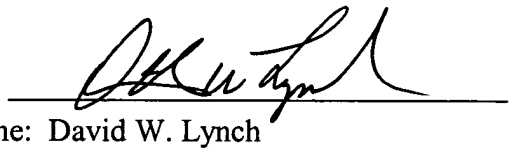
By: 
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